INTERSHIP REPORT:
AN ANALYSIS OF THE STRUCTURE AND PRACTICE OF INFORMATION TECHNOLOGY PROFESSIONAL DEVELOPMENT IN ESSEX COUNTY, ENGLAND

WILLIAM TRACEY

Internship Report:

An Analysis of
the Structure and Practice of
Information Technology Professional Development
in Essex County, England

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William F. Tracey

Abstract

The research component of this internship was designed to ascertain the nature of inservice training with respect to Information Technology (IT) within Essex County, England.

There were four criteria which were examined, first, through literature review, and then, evaluated during the internship period. These criteria were the impetus of Information Technology inservice training, the focus of Information Technology inservice training, the situation or place of Information Technology inservice training and follow up to Information Technology inservice training.

This research study sought to identify whether the principles and the practices of Information Technology professional development inservice in Essex County tended to support or to repudiate literature findings. The above four criteria for Information Technology inservice were examined utilizing Essex County Education policy documents and through researcher observation.

The principles and practices for Information Technology inservice in Essex County tended to agree with literature findings on the four criteria. Factors such as competitiveness between schools and decision-making power remaining in the hands of school governors, according to this researcher, may still have played a significant role in the information technology inservice process.

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CHAPTER 1

OVERVIEW OF THE INTERNSHIP REPORT

Rationale for the Internship

The structure of public education in Newfoundland and Labrador has been undergoing changes in recent years. Changes in curricular focus, the restructuring of school board jurisdictions, and the implementation of school councils are but a few of the alterations currently occurring.

One such area of the Newfoundland and Labrador educational process that has witnessed a change of approach and of control is that of professional development and inservice education. The Department of Education document, Technology in Learning Environments (TILE) Report (1995), identified that a new, comprehensive and coordinated approach to the professional development of teachers and administrators in this Province involving the university, the Department of Education and the school system was required.

Another Government of Newfoundland and Labrador document, Change and Challenge: A Strategic Economic Plan for Newfoundland and Labrador, (1992), in its focus on the education and technology linkage, indicated the need for a planned implementation of computer technologies into the education system. There was the expressed intention to increase the provision and use of computers and computer-based technologies in the school system as well as to develop a comprehensive Information Technology plan for the Department of Education and the school system.

The Department of Education of the Government of Newfoundland and

Labrador, in the document A Curriculum Framework for Technology Education: Living In A Technological Society (1996), established that Information Technologies be utilized to enhance communication skills in order to help develop proficiency in understanding and using the language of design and technology.

It would appear, then, that in Newfoundland and Labrador, the integration of Information Technology within the educational system may be perceived to concentrate on a wide range of curricular pursuits which respond to an advancement of technological-based applications within society. This instructional focus attempts to assist persons to acquire and assess information, to design solutions to technological problems, and to disseminate and communicate the solutions to technological problems, as well as to assess technology's cultural, social and environmental impact.

The term Information Technology is often used synonomously with computer technology, for it is often through computers and computer-based technologies that the processing and manipulation of information takes place. The types of information can range from textual and print-based materials, to graphics and image-based materials and numerical and quantitative data. Word processing, graphics manipulation, spreadsheet tabulation and Internet-based activities represent other general aspects of Information Technologies. The types of technologies can include personal computers, networked computers, print and broadcast systems.

According to the National Council for Educational Technology in England (NCET), a definition of Information Technology pertained to the use of machines such as computers and calculators to process information (NCET, 1997). The

Department for Education document, National Curriculum Orders for Information Technology: England (1996), referred to Information Technology capability as the ability to use Information Technology tools and information sources effectively to model, measure and control external events as well as to analyze, process and present information.

The acquisition of the requisite skills needed to function as a competent and confident Information Technology user required basic training in the use of these technologies and the knowledge for their appropriate use. A common way for educators to gain knowledge and skills in Information Technology use was through ongoing inservice and professional development.

The delivery of Information Technology inservice education in England was of interest to this researcher because the Education system in Newfoundland and Labrador was undergoing alterations similar to those encountered in England. The near decade since the change to England's structure of education could serve as a resource to the deliverers of inservice in this Province, providing examples of strategies for inservice delivery.

It is hoped that this internship and research study can enlighten this researcher on the circumstances affecting Information Technology inservice. Additionally it may provide useful models for the development of Information Technology inservice for those involved in Information Technology professional development.

Internship Setting

This intern was interested in working in the area of Information Technology professional development, in an environment where the changes to the organization of the educational system had already taken place.

Memorial University of Newfoundland has established a campus in Old Harlow, Essex County, situated in South-East England. Memorial University students have completed internships in other disciplines in Harlow for several decades and local authorities are familiar with Newfoundland and Labrador students.

This provided the actual setting of the internship. It emanated from a Curriculum Development Centre in the community of Wickford, approximately 25 miles southeast of Harlow. The internship was conducted with a group of Information Technology consultants, employees of the Essex Advisory and Information Service, the body which oversees professional development in the county. The duration of the placement was 12 weeks, from April 30, 1996 to July 19, 1996.

Internship Activities

The internship was planned to provide an opportunity to experience a broad range of activities encompassing the professional development activities of teachers and administrators. The focus was to determine factors which influenced the inservice process for teachers planning to utilize Information Technology applications in the teaching and learning process in schools within Essex County.

There were opportunities during the internship for practical experiences in the assessment and delivery of Information Technology professional development, which required independent work in schools in the Harlow area. Additionally, provision was made for the experience of participating in seminars and consultations with the support team at conferences and inservice sessions at the Information Technology Support Centre in Wickford, as well as in schools in the Harlow area.

The variable nature of the schedules of the members of the Information Technology support team, the cancellation or postponement of inservice sessions and the constantly changing environment of the participating schools, required that constant vigilance be maintained to enable a fruitful internship experience. The considerable commuting distance precipitated the establishment of a "virtual" or "on-line" working relationship in which the directives and consultation required to deliver the professional development activities by this researcher were conducted through a mixture of electronic mail, telephone, facsimile and person- to-person contact; in essence, the same relationship which the consultants have with the clients in the schools at which they carry out their professional development and consultation services.

Specifically, the internship involved the following experiences :

1. participation in the development of Information Technology inservice sessions at the Curriculum Centre in Wickford;
2. assistance in the delivery of inservice sessions at the Curriculum Centre in Wickford and at schools throughout the district;
3. consultation with members of the Essex County Information Technology support team about strategies to use in the determination of inservice and professional development needs of educators;
4. meetings with school administrators and Information Technology coordinators to establish long-term goals and plans for the inservicing of staff with respect to Information Technology capabilities;
5. evaluation of the Information Technology facilities of schools to determine the hardware and software needed to deliver adequate Information Technology support;
6. participation in inservice training sessions as a client to increase knowledge of Information Technology applications; and
7. participation in inservice training sessions as a client to assess effective strategies for the integration of applications into the curricular setting.

The Research Component

The research component of this internship was designed to ascertain the nature of inservice training with respect to Information Technology within Essex County, England. The first task proposed was to introduce the societal factors which precipitated the current focus directed towards information technologies. Next, the pre-research context of the English educational system, was presented. Finally, an overview of the foundation of professional development practices for Information Technology, as evidenced in academic literature sources, was offered.

There are four criteria which this researcher chose as areas that were examined, first, in academic findings, and then, to be evaluated during the internship period. A rationale for the choice of these were contained within the research component. These criteria were as follows:

1. impetus of Information Technology inservice training;
2. focus of Information Technology inservice training;
3. setting of Information Technology inservice training; and
4. follow up to Information Technology inservice training.

The four criteria served as focal points designed to assist in the process of understanding the more general question of what determined effective Information Technology inservice.

The first criterion, being the impetus of Information Technology inservice training, referred to the persons and the circumstances motivating the planned inservice. The three other criteria also served as catalysts for investigation. The focus of Information Technology inservice training, the second criterion, referred

to the objectives of the training during the session. The setting of inservice training was a third criterion. Finally, the level of follow-up support that was available to those who have engaged in Information Technology professional development was the fourth criterion. These criteria served as a starting point for the academic literature research component of this report.

Design of the Study

The aim of the research component of the internship was to examine the policy for the design and delivery of Information Technology teacher professional development within Essex County.

A qualitative research stance was adopted to investigate this topic for several reasons. First, the research was not conducted to prove or disprove a hypothesis, inherent in quantitative research, about Information Technology professional development. This study did not aim to predict, but instead, sought to explore the nature of Information Technology inservice in Essex County. Second, in the choice of the criteria for evaluation, the researcher allowed a degree of subjectivity to define the parameters of the study. The initial proposal for the internship called for a comparison of the policies and the practices between Newfoundland and Essex County. This was adapted during the early stages of the internship to focus only on the policies and practices found in Essex County. The flexibility to shift focus during a research endeavour is a characteristic of qualitative research which distinguishes itself from the more rigid nature of quantitative research

The primary source of data for the study were documents pertaining to education in general within England, and specifically, Information Technology within Essex County. It was not the intent to use interview data from persons that indicated their opinion about the planning and the delivery of Information Technology inservice. The formal policy for Information Technology professional development in Essex County was to be compared to literature findings for the four criteria chosen through the research process.

A number of documents such as Information Technology inservice

schedules, which indicated the setting and time for sessions, were analyzed to determine the specific nature of the inservice sessions. Inservice course descriptions highlighted the content and focus of inservice sessions. The school development plans of several schools indicated the attention which was to be accorded towards Information Technology professional development in the future.

Another source of data were acquired through observations conducted by this researcher during the inservice sessions and the meetings for inservice planning, and at the school visitations and the Essex County Information Technology Counsultants' headquarters in Wickford, Essex.

Limitations of the Study

Throughout the period of this internship, the goal was to obtain experience in the practice of developing and delivering Information Technology professional development within a multiple-school environment. During such time, the role of a working member of the Essex County Information Technology Support Team was assumed by this researcher, which entailed assisting the development and delivery of professional development inservice. Participation in activities that were already ongoing on behalf of the support team was permitted and with appropriate approval, contact with schools and teachers in the Harlow, Essex County area was also instigated.

Approval from the Ethics Review Committee of Memorial University for the research component of this internship was not sought because it was not the intent to collect data from human subjects for the purpose of this study nor was it to publish any aspect of this experiences of this internship, apart from this report. The choice to omit the use of formal interviews during this study possibly limited the effectiveness of the findings of this report. The choice was made because the researcher was not certain with whom interviews should be conducted, as there was no contact made between this researcher and with Essex County Education officials prior to arrival.

The internship report also does not seek to support nor repudiate the professional development practices of the Department of Education of Newfoundland and Labrador or of the Essex County Educational Authority. It is a literature review, a document analysis and a reflective commentary on the experiences encountered during the internship.

Method of Evaluation

This internship contained two distinct, yet interrelated goals, designed to allow this researcher to be immersed within the Information Technology professional context, as both a participant and as a researcher.

The first objective was to ascertain the professional development practices for Information Technology within the educational jurisdiction of Essex County and to compare them to literature and research findings.

The second objective of the internship was to develop competencies in the assessment and the delivery of inservice and professional development philosophies and activities pertaining to Information Technology applications.

Frequent consultation with the Information Technology support staff in Wickford, the onsite supervisor and faculty helped monitor my performance, through their advice and feedback.

Organization of the Report

In this internship report, there was an attempt to blend the dual nature of this internship experience. The academic nature of the literature review was combined with the personal experiences encountered during the internship. Additionally, the theoretical concepts of issues surrounding professional development itself, and with respect to Information Technology, were linked with the practical experiences of these concepts in the field.

Chapter 1 provides an overview of the internship report, giving an introduction to the internship purpose, the rationale, the setting and the research component. Chapter 2 is the research component, a requirement in the internship report. Within this chapter are the literature review of the four criteria of Information Technology professional development inservice, followed by the findings as to how these criteria were evidenced in Information Technology professional development within Essex County. Chapter 3 provides a personal reflection and evaluation of the internship experiences.

CHAPTER 2

INFORMATION TECHNOLOGY PROFESSIONAL DEVELOPMENT

Introduction

> The future may not be as we envisage it. Organizational structures like education are evolving to reflect a new world view. Driven by combinations of technological innovation, societal change, and redefined educational needs, the K-12 educational system of this Province is experiencing transformation.
> (Technology in Learning Environments. 1995. URL: http://www.stemnet. nf.ca/ Ed/Program/TILE/preface.html)

It is rational to assert that a new world order, presently evolving within segments of the westernized population, is one in which technology permeates to the foundation of an increasing number of its facets. The past century has seen the introduction and expansion of new fields of technology, within such areas as telecommunications, mechanics, transportation and science. The global marketplaces have replaced many old trading regions and practices, introducing new partners to overseas markets, and as well to unseen competitors. Business and industrial applications, designed to increase productivity and to allow flexible working environments have transformed the workplace, changing manual labour to information handling and processing.

The future alluded to previously, as found in the preface of the Newfoundland and Labrador Department of Education's document Technology in Learning Environments(TILE) Report, (1995), has received attention in not only this Province's education system, but in many others throughout the world. The response to the need to increase the technological literacy of its citizens and

students ultimately falls on the shoulders of the teachers and educators within the educational system.

If this is construed as a changing dynamic of the teaching profession, coupled with the expansion of computer technology and distance education, it requires an increased focus and adjustment for those responsible for the educational development of teachers.

Background

The model of the system of Education planned in Newfoundland and Labrador has some evidence in the present education system of England. Prior to the middle 1980's, schooling in England had undergone little by way of transformation since the Second World War. The structure that existed then involved financial control from the central government with curricular adaptation and augmentation exercised independently in virtually every school and classroom.

In July, 1987, the Department for Education and Science published the document The National Curriculum 5-16, (1987) which emphasized the need for the training of the population in work skills required for the future. Subsequently, this belief was incorporated into the Education Reform Bill, designed to enhance basic skills and to provide rigor within education. The Education Reform Act, which was formulated into law in 1988, provided a series of changes to the provision of education in Great Britain. The Education Reform Act incorporated the principles of national educational standards to be attained by all students, accountability for outcomes shared by teachers and by schools and the devolution of power to schools and school governors' boards for the general operation of the schools.

Trowler (1995) found that the National Department of Education in England established more rigorous control over the curriculum which was taught in the classroom, while maintaining some authority over the educational process. The development of the National Curriculum Subject Orders in 1988 formally established Information Technology within the education process. The inclusion of Information Technology in the subject area of design and technology in the

initial stages of implementation was carried out to facilitate the placement of this new discipline in a field that was similar in nature. The development of Information Technology capability had been difficult, since it was considered a tool able to be integrated into other disciplines, yet also stood alone as a subject area which required formal instructional strategies.

The latest Information Technology Orders for the National Curriculum appeared to regard Information Technology as a cross-curricular thread, as evidenced in the opening statements of each subject order.

> Pupils shall be given the opportunity, where appropriate, to develop and apply their information technology capability in their study of ... (Department for Education, The National Curriculum : England, 1995)

These most recent Orders placed considerable attention on the use of Information Technology throughout the subject areas. This process was supposed to begin at the earliest stages of the child's educational development, with the guidance of the classroom teacher in the primary school and the subject area specialist in the comprehensive school.

The Newfoundland and Labrador Department of Education, it appeared, had similarly recognized that the evolution of its system of education presently ongoing must contain a clear focus on the place technology will occupy in the teaching and learning process.

> Part of the redesigning process (*of the education system*) is planning for the integration of technology into and across the curriculum.(TILE, 1995, URL http: // www.stemnet.nf.ca/DeptEd/Program/TILE/preface.html)

Inherent with the realization of the need for technology to be a growing part of society, are the considerations which influence the planning of the integration into and across the curriculum. Central to the issue is the ability of teachers to deal with the Information Technology on a personal, as well as a professional level.

Four Criteria for Information Technology Professional Development

There are several ways by which teachers develop knowledge about Information Technology applications. Self-discovery is a method whereby one explores, usually on a trial and error basis, computer and Information Technology applications in a home or work environment. Peer mentoring involves a sharing of skills, information and strategies from a more experienced user to one whom lacks these bases of knowledge. Both of these methods are beneficial to the overall Information Technology professional development of an individual, but are limited by factors such as unstructured learning environments, loss of motivation and reaching a peak in skill and knowledge.

A more formal approach to the acquisition and increase of one's Information Technology knowledge base is through voluntary enrollment in credit or non-credit courses offered by universities, colleges, private training institutions and associations. These sources of training and development usually offer certificate-granting programs, structured to meet the needs of adult learners. One potential drawback is that these courses are often offered outside of work time, requiring significant financial investment to the learner. These three methods fall within the scope of professional development - that which contributes to enhancing the development of skills and knowledge, which, in turn, can contribute to an increase in the performance of one's abilities within a profession or occupation.

The increase of knowledge within Information Technology can be applied to many occupations. Financial institutions' use of statistical and spreadsheet software packages, desktop publishing applications employed for media purposes as well as communications technologies, such as word processing, conferencing tools and Internet software, utilized in virtually every office, are but some

examples. Each software package and its functionality can be tailored for use in the environment in which the applications are needed. It is a user-demand setting, where "just-in-time" training is often provided to allow the technology to become a part of the repertoire of the user, increasing productivity on the job. Onsite, job specific training is provided by trainers associated with a specific software package to demonstrate the application in the work setting.

The context of Information Technology professional development for teachers has two realms; personal and instructional development. Many of the applicable functions noted above are valid for the classroom teacher as well. Desktop applications can be used for publishing newsletters and memos, word processing for test development, spreadsheet packages for grading and Internet applications, for communication with other teachers and for searching for information to assist in lesson development.

Each of these uses can be thought of as being a personal application or use of Information Technology, where the technology is utilized for one's own benefit. The use of a spreadsheet, for example, to calculate student averages, to rank achievement and to publish results can potentially diminish the time normally spent doing such tasks. It is the choice of the individual teacher to take the time to use these technologies.

A second aspect of Information Technology professional development for teachers involves a more complex process. It is not only the acquisition of skills of specific computer technologies, but also the development of strategies by the educator to appropriately and successfully integrate these technologies into the classroom, curricular setting. The ultimate goal is for students to become aware of these technologies and to use them appropriately.

The place where these skills and strategies have usually been conveyed to teachers is the "typical" inservice setting. Typical meaning the inservices are

usually organized by school board officials with Information Technology experts conducting the seminar. There is usually some hands-on experience with the workings and functions of a particular Information Technology software package. The inservice is often provided to staff members at a remote site, possibly at the school board or in a lab setting, where staff gather to become acquainted with modern, innovative computer technology. Finally, at the end of the day (or less time), the participants leave to return to their classrooms, ready (or not) to implement what was just learned.

If this sounds typical, it is because it has been the norm for Information Technology inservice training. The most frequent form of inservice experienced by teachers related to the application of computers in education was, according to Pelgrum & Plomp, as cited in Collis, (1994), an introductory, stand-alone, computer-specific course, possibly followed by a variety of other types of computer specific courses.

It is from this standard approach for Information Technology inservice development that this researcher sought to analyze the components of a typical inservice session. Identified were four issues which seemed to define the nature of Information Technology professional development inservice and which could be applied to any form or example of Information Technology inservice.

The four issues were as follows.

1. the catalyst or impetus for an inservice session. This encompassed the factors which motivated the scheduling and delivery of a training session, as well as those individuals who had determined that the training was needed. It was of interest to see what research findings indicated about those who planned for and who deliver an inservice session. Did administratively-driven workshop sessions, where little teacher input in planning was requested or received, fare better or worse than those where

the ownership of the process was teacher-motivated ?

2. the focus of the training. What did the research and literature say about inservice which was concerned primarily with the general function and operation of computer applications? How did inservice where the focus of the training is course or content specific compare ?

3. the context in which the inservice had taken place. Which of the following potentially offered the teacher a more beneficial setting in which to learn: an external, fully-equipped setting, where the latest technology was available or an onsite, in-school inservice where the equipment available to the teacher was that which was used for the inservice? Additionally, if the training was delivered by computer experts, did it have more of a positive effect on learning by the participants, than if it was a process where teachers taught fellow teachers?

4. the issue of the level of follow-up available after the inservice session was addressed. Was there an indication that the training provided during an inservice session was adequate, therefore requiring little or no support ?

Literature Review

The Impetus of Information Technology Inservice Training

The motivation behind the planning and the delivery of an Information Technology inservice may influence the level of learning occurring during the training.

Hamburg & Helm (1991) stated that motivation was a key element in the level of learning which occurred in Information Technology inservice training. A desire to learn new skills may be enhanced if there was interest in a topic or if there was a need identified which would be satisfied by the training.

Wiburg (1994) found that a problem with many inservice sessions occurred when the identification of the needs of the learners involved was lacking. If the purpose of the inservice was different from the needs of those participating, there was a potential that the inservice would have low effectiveness. This may also be true, Wiburg stated, when the learners expectations for an inservice were not considered.

Winnans & Brown (1992) indicated that teachers' own attitudes could affect the level of computer implementation into the curriculum. Those who were fearful of technology or skeptical of how computers could be integrated successfully into the classroom curriculum were less willing to accept and implement this new medium.

Shermis, Qunitana & Estes (1990) stated that many teachers had not seen technology modeled in the classroom setting. It was possible to hypothesize from this that teachers may have possessed skepticism as to whether Information Technology could positively affect the teaching and learning process. This, in

turn, could possibly negatively influence motivation to participate in inservice training.

Lever (1992) found that there was a recognition of the need for Information Technology training to meet the needs of the teacher, in a way dictated by the professional in need, rather than in a historically-appropriate, administratively- convenient manner.

Winnans and Brown (1992) indicated that the push for computer integration into the education system had generally come, not from teachers themselves, but from computer technology experts and administrators. Hawkins (1994) stressed that in order for training in technology to be effective, teachers must see a purpose, a relevance and a value in what was being presented. Shermis et al. (1990) also stated that teachers must have the opportunity to choose technology instructional materials and be provided the flexibility to implement them into their instruction.

In order to strive for effective computer inservice, teachers, in collaboration with administrators, should set the goals to be achieved during and after the training. Teachers are left to implement the training and the technology into their own classrooms. It is erstwhile to assume, then, that they should have some control over the objectives of the inservice, since the results of the training are to be carried out within their classroom context.

Wiburg (1994) indicated that a strong administration and a bottom-up commitment was necessary for successful technology integration to occur. A strong school administration may be necessary to support the allocation of funding and time required to plan a long-term approach to Information Technology professional development.

The Focus of Information Technology Inservice

There appeared to be a strong consensus on the direction or the focus of Information Technology inservice education within the literature surveyed. This may be partly driven by the recognition that the inservices pertaining to information and computer technologies of the past may have fallen short in delivering strategies for the application of skills and knowledge to the classroom.

Robinson (1991) found that many inservices simply provided knowledge to teachers and did little to help them transfer knowledge to the classroom setting. The knowledge that was often transferred was the basic operation of computer technology and of software packages. Woodrow (1991), with a similar view, indicated that there should be less of a concern with the training of basic computer skills.

The general trend from the research that was examined indicated that Information Technology training should occur in a curricular-based setting, where the skills and knowledge acquired could be situated in a familiar discipline. It was also found that an essential component or concentration within inservice be the development of specific pedagogical and instructional techniques for the application of this knowledge into the classroom.

Willis (1993) found that there was a need for context-based training as a condition for the encouragement of technology use among teachers. The contextual base referred to embedding the training into the course or content area with which the participant was familiar.

Winnans and Brown (1992) contended that a plan should be developed for the implementation of computer technology into the curriculum. The plan should be realistic, taking into consideration the students and the teacher, as well

as the class itself, the class within the school and the school within the surroundings.

Hamburg and Helm (1991) stressed that an integrated approach be adopted, where computer literacy should be seen as pertinent to the course of study. The computer technology application in a course should be relevant to what the learner is expected to do with the training upon return to the classroom setting. Overbaugh and Reed (1995) found that when instruction in Information Technology was content specific, teachers were more willing to learn.

An educator who had learned how to use, for example, word processing as applied to a specific objective within his or her course was probably more likely to see the applicability of the technology into the instructional process. And a demonstrated, concrete example may encourage that teacher to acquire more Information Technology skills and strategies.

There was not only the need for Information Technology inservice to be based in a curricular or course specific context, in order for the training to be improved. Also identified within the literature, was a need for inservice training to include planning in instructional strategies for the integration of computer technology into the curriculum.

Reiner and Plomp (1993) found that a need existed for training in the pedagogical and the instructional aspects of computer use in specific subject areas. There had to be an instructional base, grounded in conventional pedagogical theory, which could support the integration of these technologies into the classroom learning environment.

Lever (1992) supported the grounding of the integration of technology within the teaching and learning process, having indicated that focus needed to

be on the application of the technology to instruction and learning. The technology had to serve either the teaching process, the learning process or even both, and not simply be integrated for no justifiable reason.

Gilmore (1995) contended that the most successful arrangement for teachers to adopt technology in the classroom was likely to involve a substantial element of school-based work. Added to this, Browne and Ritchie (1991) found that the transfer of skills from inservice instruction to classroom use improved when the information was presented in a problem-solving context, based on a familiar curricular context.

The Setting of Information Technology Inservice

The environment in which inservice for Information Technology was delivered can be critical to the overall effectiveness of the process. The environment can represent the physical setting of the training, the equipment used during the session, as well as those involved in the delivery of the sessions.

The physical setting can add to or detract from the effectiveness of a planned inservice. Teacher professional development that involved topics such as discipline concerns and staff motivation may benefit from a change of scenery to enhance group dynamics, extract a group from tense situations or simply provide a relaxed atmosphere.

Information Technology, like disciplines such as music and physical education, are more "situated" in nature. Situated referred to the discipline of music frequently requiring instruments for performance or physical education requiring playing fields for a particular sport. These disciplines involve a theoretical component and an applied segment. It is the applied aspect which offers challenges for inservice educators, as well as teachers, for the use of Information Technology applications lends itself to the use of Information Technology hardware such as computers.

Clemente (1991), in describing an effective computer inservice, noted that the session should be at the school site. Just as the training should be provided in a context that was linked to the course or subject area, in order to improve the probability of it being accepted by the teacher, so, too, should the Information Technology training be conducted at a site familiar to the participants.

Wiburg (1994) supported this belief, indicating that staff development should be available to educators at a local site. The technology to be employed in

the classroom or lab setting after the inservice was finished should be the technology upon which the training had occurred. Voytek (1996) similarly found that onsite inservicing seemed to be key to developing a comfortable and knowledgeable computer user. The learning curve for Information Technology applications can be overwhelming to the novice. A familiar environment, one's own school, can alleviate some of the trepidations about Information Technologies.

Not only was the physical setting of one's own school possibly a more conducive place to learn because of its familiarity, this environment also forced inservice developers and trainers to adapt to the conditions in which the teacher will have to attempt to carry out the strategies presented in the inservice. Gilmore (1995) found that the teacher development which occurred in a school-based environment was a factor in the success of the overall program.

As for those involved in the delivery of the inservice training, some teachers seemed to have developed a stronger technological foundation when fellow teachers conducted the process. Collis (1994) found that much computer-related teacher education had been stimulated and delivered by persons without an academic background in teacher education. So, it was conceivable that those doing the training of the teachers may not have been pedagogically trained to instruct the teachers nor able to focus on the needs of the teachers relevant to the students, the recipients of the teachers' instruction.

Shermis (1990) noted that peer interaction was beneficial for the learning which occurred in the initial training sessions, as well as in the follow-up. Willis (1993) found that a supportive context greatly encouraged technology use, whereby a network of teachers were accorded time to interact, share ideas and

explore technologies on their own. Hawkins (1994) similarly stated that time must be accorded for experimenting and trying new ideas and that there be the ability to share findings and concerns with others.

Reiner and Plomp (1993) found that informal interaction, communication and team building were three components for staff development which contributed to computer integration. Gilmore (1995) and Rutherford and Grana (1995) expressed that a peer, teacher-to-teacher environment was one factor in the success of a teacher development program.

The Follow-up and Support Information Technology Inservice

The literature reviewed indicated that the inservice session can be accepted as a starting point in the continuing learning process of post-inservice situations.

Wiburg (1994) contended that it was well known that one-shot inservice workshops had very little, long-term effect on classroom practice. Browne and Ritchie (1991) also pointed to the weak link between inservice and application in the classroom in one-time inservice sessions.

The concepts of technology training, development and curricular improvement and integration are a continuous process, so asserted Grau (1996), indicating that there may be a need of 3 to 4 years of support to make a substantial change in instruction. Voytek (1996) found that the inservice process itself should be continual and not thought of as being a one-time incident. Wiburg (1994) also believed that staff development must be a continuous in order for integration to increase. Gilmore (1995) supported the notion, stating that effective implementation required a long-term commitment that was ongoing for as long as objectives were still to be met. Willis (1993) also agreed with the concept of continuous support, indicating that teachers needed support once they decide what possible avenues of curricular integration they wish to explore. Owston (1995) found that successful implementation depended on intensive assistance and follow- up support with groups of teachers at the school level.

The long-term backing required had to be supportive of the teacher as he or she progressed to the final stages of full curricular and instructional integration. Winnans and Brown (1992) stated that there was a need for better onsite support to bridge the gap created by teachers' lack of knowledge and of implementation

strategies. Persky (1990) agreed, noting that novice users needed someone to whom they can turn for knowledge and support at all times.

Persky (1990) further noted that teachers must engage with others in ongoing reflection about their instructional use of technology. Teachers having interaction, Persky purported, were more likely to critically evaluate their practice and redesign instruction to meet student needs and curricular goals. Hawkins (1994) indicated that discussion about how to integrate and implement strategies within the classroom was necessary.

The Essex County Experience:
Introduction

The present commitment to the integration of technology into the lives of students and teachers in Essex County was highlighted in the following quote, as taken from the Essex Advisory and Information Service's IT (Information Technology) Curriculum Handbook (1996).

> Every pupil and member of staff is entitled to become a confident and competent user of Information Technology. Every learner has the opportunity to develop and practise their IT (Information Technology) skills in a variety of curriculum contexts enabling them to meet the IT challenges in continuing education, home, leisure and work. (Essex Advisory and Information Service, IT (Information Technology) Curriculum Handbook, 1996, p. 3).

There were no distinctions between the students and the teachers as learners, within this Information Technology context. This may have been an recognition that educators within Essex County are considered as much learners of these new educational tools as are the students they instruct.

Further delineated within the IT Curriculum Handbook (1996), in the Aims for Information Technology Use section, was the belief that Information Technology become a tool available for all to use to enhance the teaching and learning process.

> IT should become a natural tool for staff and pupils to use, integrated into everyday working lives, so as to enhance the quality of teaching and learning experiences for all. Every learner will be encouraged

> to use IT resources as an information source, a processor and a presentation tool. Opportunity will be available to experience a variety of IT equipment including computers and software, to learn to select the appropriate IT tools to use in any situation and to enjoy using technology in the process of achieving satisfying outcomes. (IT Curriculum Handbook, 1996, p. 5).

The achievement of the aims outlined above required capital expenditure, to both upgrade computer-to-learner ratios with additional, modern equipment, as well as a commitment to continue to provide Inservice Training (INSET) in order for educators to become confident and competent users.

For many of the present teaching profession in Essex County, computer technology had made its presence known for several years. It had been that older models of computers, such as the BBC Master, were placed into schools around 1980 and many were still to be found in classrooms today. It was generally accepted that those computers were introduced into the teaching setting without the purpose of their presence fully understood and accepted by the teachers at the time.

Industry, business and the general public appear to be more aware of the impact of technology on society. The education system has responded to the increasing prevalence of technology, notably, computers in society, by attempting to raise the prominence of Information Technology applications.

The Four Criteria as Evidenced in Essex County

The status of Information Technology professional development in Essex County, with respect to the four criteria of the impetus, the focus, the setting and the level and type of follow-up support for inservice activities were evaluated in this section.

The conviction of the County's Educational Information Technology sector appeared to be addressed in the following excerpt from the Planning the Provision of INSET section of the Essex Advisory and Information Service's IT Curriculum Handbook, (1996).

> Good staffing exists where sufficient teachers have a degree of competence and commitment to support the use of IT in their phase and/or subject specialism. Provision of support staff able to fulfil technical functions, allowing teachers to focus on the curriculum. (IT Curriculum Handbook, 1996, p. 33).

This acknowledgment that teachers develop competence in the use of IT within their subject area, pointed to implications for Inservice Training.

The Impetus of Inservice in Essex

There was a recognition that the need for Inservice Training (INSET) should be a shared belief among teachers and administrators. In the IT Curriculum Handbook (1996), there was an assertion that the more fruitful training activities are often those where senior management had recognized the needs of staff and where training was supported in the school's development plan. It further indicated that the need for INSET could be gauged from the match between the expertise of the staff and the capability which they were required to teach. Because of the changing nature of IT, the regular training of staff was determined as essential.

The present nature of education within England involved an elected council of School Governors, whose duty it was to administer the provision of education within its respective school. Virtually all things, other than the formation of curriculum, fell within the jurisdiction of the School Governors. Further, each school had to develop a school development plan, indicating the future direction for areas such as fundraising, school improvement and inservice training.

In order for funds and inservice time to be directed towards Information Technology, there had to be support at the school administrative level, which, in turn aided in gaining support at the governors' council level. With technology upgrading and teacher inservice in Information Technology near the top of many schools' development plans, there was the potential for a considerable amount of money and time being allocated to computer equipment and training.

School governors had considerable power over the allocation of funding within schools. This could have resulted in the needs and desires of teachers not

being met, due to a choice to shift focus to other disciplines. It was unclear whether a teacher-instigated need for increased Information Technology inservice had been addressed or even if it had been recognized. It may still be that, as Lever (1992) indicated, the provision of Information Technology inservice training was historically or administratively appropriate, being something which responded to the wishes of school governors and administrators.

This possible lack of control over the ability to propose the planning and delivery of Information Technology inservice could have influenced the motivation which teachers have to any subsequent inservice. It was not within the scope of this study to determine whether teachers were more or less motivated during Information Technology inservice training. However, one could hypothesize that given the control which administrators and school governors still possess over the inservice process, teachers may still feel left out of the process.

The Focus of Inservice in Essex

The focus of Information Technology inservice training in Essex County appeared to be concentrated on the acquisition of skills and knowledge within a curricular context. According to the IT Curriculum Handbook (1996), there was a belief that effective inservice training occurred when technical training was embedded in appropriate curriculum contexts.

Information Technology instruction in Essex appeared to follow the findings of Willis (1993) and Helm and Hamburg (1991), who indicated that context-based training, where computer technology was seen as pertinent to the achievement of course objectives, encouraged Information Technology use.

The National Curriculum Orders for each subject area offered clearly-defined, observable behaviours and outcomes that students were expected to achieve throughout their participation in a course of study. With respect to Information Technology, every other subject area had contained within it an Information Technology component. For instance, examples were provided in the subject order documents for English Communications in every level of schooling as to how Information Technology could be used to produce pieces of work using word processing, graphics and spreadsheet packages. This outcome-based focus within the education system actually assisted those offering training in Information Technology applications.

Teachers were already aware, via the National Curriculum Orders, of the outcomes they were expected to elicit from their students using Information Technology. What they usually did not understand was how they were to go about doing this in their own classroom. As Shermis et al (1990) indicated, many teachers had not witnessed technology utilized in a classroom setting. It was with

this understanding that inservice providers attempted to ground the technology instruction with identifiable examples which teachers would recognize as being attainable within the classroom.

The development of a plan for the implementation of technology into the curriculum, highlighted by Winnans and Brown (1992), was a key component for the full inservice and learning process in Essex. It was the intention that teachers, in cooperation with Information Technology coordinators and the Information Technology consultants from Wickford, would jointly schedule the tasks and timetable that the inservice and follow-up support will require.

The act of learning Information Technology skills in the context of a familiar subject area was designed to allow teachers the opportunity to develop their own computer skills in an area in which they already had experience. The acquisition of instructional skills and strategies to implement this computer technology into the classroom was still a relatively new area in teacher education, with limited research and strategies available for examination.

The approach to Information Technology inservice in Essex, of training teachers to learn and experience what their students will eventually be asked to learn and experience, put both the teacher and the student in the same category as learners of the technology. It was through teachers' sharing of approaches and methods that instructional strategies developed.

The Setting of Inservice in Essex

Inservice training for Information Technology in Essex County generally followed the ideals recognized in the literature findings.

The changes brought about as a result of the Education Reform Act in 1988 brought sweeping reorganization to the process of inservice in Essex County. Prior to the passing of the act, inservice was organized at the level of the Local Education Authority (LEA). Inservices were planned according to the schedules of the instructors, who determined the nature of inservice sessions. Generally, the sessions were held in centrally-located sites, where teachers traveled to be updated on new Information Technologies.

The current approach radically changed the inservice process. The control of funding at the school level forced schools to accept more responsibility for their inservice training. The funding for all inservice within the county was somewhat lower, due to the reformation, but the big change occurred in the flexibility accorded to schools. No longer did schools have to participate in inservice sessions over which they had little or no input, on a schedule which may not have conformed to their present situation.

Schools now could request training in a particular computer application with a concentration they wished to have emphasized, at a time which fitted their schedules, and in a place which they chose. The setting could have been at the Information Technology Support Team's headquarters in Wickford, in the southeast of the county, with the most modern hardware and software. Or it may have occurred at the school itself or at another venue conducive to meeting the goals set by the school and the provider of the inservice. The services of the Information Technology specialists were then "purchased" from the LEA with

the funds allocated to the school from the government. Interestingly, the schools had the option of going to the private sector to bring in professionals, other than those affiliated with the LEA, to deliver inservice training.

The usual setting for the inservice training varied between sessions at the facility in Wickford and those conducted in a school-based environment, where training took place on the type of equipment found in the classroom. The IT Curriculum Handbook (1996) indicated that sessions be arranged in school to share expertise among staff, with the employment of an external advisor to offer on-site training. The sessions at Wickford were offered to provide training related to the Internet or to other applications not found at a school, but which a school would be soon acquiring.

Those employed as Information Technology consultants, who were, for the overwhelming majority of the time the providers of inservice and advice, were all former teachers who had gained skills and knowledge in Information Technologies. Assisting in many inservice sessions was a school's Information Technology coordinator and the coordinator for the subject area, addressing the concerns of inservice being conducted by non-teachers, highlighted by Collis (1994).

The onsite, familiar context of one's school and fellow teachers supported the findings of Shermis et al (1990), Willis (1993), Reiner and Plomp (1993) and Rutherford and Grana (1995), whom all indicated that a familiar context, with peer interaction and networking could enhance the effectiveness of the inservice process.

The Follow-up and Support of Inservice in Essex

Once formal inservice training has been completed it was crucial that a support structure be established to assist new Information Technology learners in the ongoing learning process.

The IT Curriculum Handbook (1996) stressed the need for schools to allocate time to teachers for private study of Information Technology applications and be allowed to consolidate the experiences gained during training through informal interaction with other teachers engaged in the learning process. Persky (1990) and Hawkins (1994) emphasized the need for reflection and time to discern appropriate methods and strategies, in order to precipitate effective integration.

As Browne and Ritchie (1991) and Wiburg (1994) indicated, there was a consensus that after initial training had taken place, the concepts and skills introduced in an inservice session were usually not carried through to full, effective implementation in the classroom without a high level of follow-up support. Time for reflection could address difficult areas and support can be sought to address problems.

The Essex County Information Technology Advisory Service, based in Wickford, encouraged the staff development process to continue in the school long after the inservice is completed. The IT Curriculum Handbook (1996) further indicated that teachers should be encouraged to attend additional courses run in the region in order to continue the acquisition and building of skills and knowledge. The principle of continuous development, highlighted by Voytek (1996), put the onus on the school and invariably the teachers themselves, to maintain an atmosphere of ongoing learning in Information Technology.

The support could be fulfilled within the school in a number of ways. Winnans and Brown (1992) and Persky (1990) maintained that there was a need for intensive assistance and follow-up support at the school level. This could be achieved by colleagues who shared training, supporting each other whenever difficulty was experienced. Another support mechanism available in the school could be as informal assistance offered by the Information Technology coordinator, who generally could assist with technical or integration difficulties or seek out experts who could offer more detailed advice.

The Essex County Information Technology Advisory team added to the support process by providing a telephone Help Line, through which all schools could access one of the six Information Technology consultants. The service allowed schools seeking help solving urgent problems direct contact with an Information Technology consultant. The county recognized there was a lack of funding for the provision of adequate numbers of support staff who would be able to fulfill such technical functions in schools, thus allowing teachers to focus on the integration of Information Technology into the curriculum. They still, however, strove for the ideal situation, where schools would have the support staff available to attend to hardware and technical issues, assisting the Information Technology coordinator.

Conclusions

Information Technology inservice within Essex County existed within a larger context which exerted a variety of influences on its development and its delivery.

This research study sought to identify whether the principles and the practices of Information Technology professional development in Essex County tended to support or repudiate literature findings. The impetus for, the focus of, the setting of and the level of follow-up support for Information Technology inservice in Essex County, as evidenced in Essex County Education policy documents, were compared to the literature research findings.

The impetus for Information Technology inservice in Essex County was recognized, within the policy documents, as needing to be responsive to teacher demands, as well as to be planned by those served by the inservice. This was in agreement with the general literature finding. However it was felt by this researcher that the presence and power of school governors and of administrators was a factor which could possibly inhibit the actual practice of teacher-directed planning of Information Technology inservice.

The focus of inservice for teachers with respect to information technologies was curricular based, as the predominance of literature findings surveyed suggested. The clearly-developed guidelines for student outcomes found in the National Curriculum Orders for all subjects were, perhaps, one set of a group of factors which helped focus teachers and those responsible for the delivery of the inservice on a common concept.

The setting or context for the delivery of Information Technology inservice within Essex County was found to be in agreement with the research

findings examined on these issues. According to the policy of Essex County educational authorities, Information Technology inservice should occur, as much as possible, within the school environment. Additionally, those participating in the inservice should be aware of instructional strategies to assist in the integration of computer technology into the classroom setting.

The level of follow-up support suggested by those responsible for Information Technology policy formation within Essex County corresponded to the literature findings on the issue. On-site assistance should be available to provide technical support to teachers, freeing them up to concentrate on curricular integration. There was also recognition that opportunities be provided for teachers to share ideas and to support each other's learning within the school, as well as with teachers in other schools.

Although the policy and practices of Information Technology professional development within Essex County discovered in this study generally tended to agree with the literature findings, there are external factors which placed inservice training in Essex County in a precarious setting.

The dual-natured change to education in England in 1988, evidenced in the development of the National Curriculum and the Information Technology Orders within it, as well as in the devolution of much of the decision-making power to schools, saw Information Technology rise to significant prominence within educational circles, as well as in society in general. The need for teachers, students and the general public to become competent and confident Information Technology users has been identified as a goal of the present education system in England.

The ability for teachers to equip their students to become proficient in

Information Technology applications was presupposed by those teachers themselves acquiring the necessary skills and strategies. The overwhelming form of professional development which was made available to teachers in Essex County was Inservice Training for educators (INSET), which involved the supplying of advisors to provide inservice and technical support to schools throughout the county. The Information Technology Support Team, based in Wickford, was a subunit of the Essex Advisory and Inspection Service, the County's provider of support to all teachers in all subject areas of the curriculum.

With the responsibility on the school to determine their needs and to request that the Information Technology consultants provide professional development or advice, it was found that various schools had differing levels of interest in providing Information Technology professional development. This has resulted in some schools having considerably less levels of computer facilities and lower competencies among its staff.

> As schools become more autonomous, some are tending to cooperate less with other schools in funding IT inservice, are becoming less aware of IT development in the curriculum and by developing their own independent IT practices sometimes replicate effort and deploy expertise and resources inefficiently. (HMI Report, 1994, as cited in Tagg, 1995, p. 8).

Members of the Information Technology support team in Wickford have indicated the awareness of this discrepancy, but they were unable to approach schools to offer their services or advice. The request for consultation must be made by the school. If a school had not the funding nor the priority to upgrade its Information Technology facilities or to provide Information Technology support to its staff, it could lag behind in the provision of Information Technology to its

students.

According to those involved with educational policy at the national level, there was a fear the level of support provided by Information Technology consultancy centres may decrease.

> As funds for inservice training and support are delegated to schools, many centres which support Information Technology in schools have become very vulnerable" (HMI Report, 1994, as cited in Tagg, 1995, p. 8).

It was not only the case that schools may have distanced themselves from other schools, creating potential discrepancies in the focus and direction of inservice and Information Technology development. So, also, the actions of a school to control their own development may have resulted in the reduction or loss of a regional level of inservice support.

The prospect of becoming less connected with technology learners, in a time when Information Technology has the potential to build new networks, was a consideration noted by those concerned with Information Technology inservice in Essex County. The challenge faced by these inservice trainers and support persons was ever-present, as their existence as an entity depended upon the recognition of the need of and request for assistance by teachers, administrators and school governors in a cooperative manner. When the teachers' needs for sound, structured inservice in accordance with the four criteria forming this study are heard and acted upon by those holding fiscal and administrative control, Information Technology inservce may be on the way to effectively helping teachers integrate Information Technology into the educational process.

CHAPTER 3

A Critical, Personal Reflection on the Internship Experience

The purpose, I believed, of this reflection on the internship process was to assess and discuss the relevance and value of the activities conducted during the 12 weeks in the internship setting, as they related to the objectives which were outlined in the internship proposal. The main objectives were to gain Information Technology professional development experience and to conduct an analysis of the policy for Information Technology professional development in Essex County. This account contains descriptions of activities experienced during the internship, as well as observations offering possible explanations for shortcomings and setbacks encountered.

There are three sections. The first describes the overall internship experience, giving a weekly account of the activities, based on journal writings collected. Included in this section are accounts relevant to the process of conducting the research study. The second section looks specifically at the role played as an Information Technology consultant during the internship. Included here for consideration are the interpretations of the internship process. Also, the various tasks and duties carried out through the role of Information Technology consultant are analyzed independently, as well as against the objectives outlined for the internship. The third section is an examination of the research findings as applied to the overall internship experience

Section 1 - Weekly Account of Internship

Week 1 April 29 - May 3

Upon arrival in Harlow, I found out that I would be travelling quite a distance to Wickford, the site of my placement for the internship. It was approximately 25 road miles from Harlow to Wickford, but the commuting would turn out to be difficult and costly. I traveled there on the Tuesday after arriving, taking the recommended local bus. The normal 30 - 40 minute drive by car into a 3 1/2 hour ordeal on the public transportation system. This mode of transportation was ill-suited, for it entailed the loss of nearly the full day in travel.

Upon arrival at the Essex County Advisory and Inspection Service's Wickford Curriculum Development Centre, I was greeted by Nigel Horn, one of the six Information Technology consultants stationed at the centre. Nigel introduced me to two more members of the Information Technology team, Peter Featherstone and Sue Nuttall. After informing them of my travel ordeal and discussing what I was interested in examining, it was suggested that I base myself in Harlow and conduct Information Technology consulting in as many schools as possible. This seemed more reasonable and I could remain in contact with Wickford via email and telephone. Nigel gave me a schedule of upcoming inservice sessions in which I was welcome to participate and to help administer. Also, some schools in Harlow had been visited by members of the Information Technology team. I was invited to do follow up work at these schools. I had to consult with Martin Richards, the Harlow contact for the Memorial interns to establish a protocol for visiting schools. He informed me that he would contact schools close to MUN's Harlow Campus, for ease of travel, with more distant

schools to be contacted later, as need required. I began some preliminary research searching for documents and journals related to Information Technology professional development at the Education library of the University of London, a place with which I became quite familiar.

Week 2 May 6 - May 10

This week I visited Wickford once again to get a better understanding of the work which was carried out at the site. I was placed at the Help Phone for a short period of time, handling calls from schools throughout all of Essex County. Many were simple hardware and software problems which I responded to as well as I could. The policy was to answer queries if you knew the answer, and to seek out assistance from someone else at the Information Technology centre elsewhere and to get back to the person in a reasonable period of time. I experienced no problems during that first short trial. I also visited for a longer time the onsite Information Technology lab and conference centre, which was designed to handle about 15-20 persons. There were different types of computers there, PC's with names like Acorn and Research Machines, two common brands for educational computing in England. It was too bad that there were no relevant workshops or inservice sessions in the near future and there would be little or no visitation by any of the Information Technology members to Harlow. The focus of my attention for the next few weeks before midterm break was to visit the schools with which I had made contact. The most favorable responses came from Tany's Dell and Abbottsweld, primary schools and Bray's Grove, a comprehensive school.

Week 3 May 13 - May 17

I received some draft documents from Sue Nuttall this week concerning an Information Technology policy handbook which was being formulated for the county by the Information Technology team. In the document were some of the topics I was researching for my study. She directed me to some additional resources in London and some Education officials in Chelmsford, a nearby city, where the Essex County Education Authority was situated. I consulted with Nigel about some of the upcoming inservice sessions which were to occur after midterm break. I wondered if I could assist in the delivery of some of the topics, especially the Internet and WWW applications and some of the inservices on databases and foreign languages. I spent a day at Tany's Dell, a nearby primary school. After spending the day shadowing the Information Technology coordinator, I sat down with him to discuss some of the problems he was experiencing with respect to the Information Technology capability and literacy at his school. The topics discussed included old equipment, costly upgrading, high levels of student interest and teacher reluctance to adopt computer use. These findings were evidenced in subsequent discussions with other teachers. The coordinator told me of his plans for the next few years, from staff training, to forming alliances with businesses.

Week 4 May 20 - May 24

This was a hectic week, as I went to London twice to do some research at various libraries. It was difficult gaining admission to places for research and to be allowed to access materials as a foreign student. This was a problem as some of the material was well suited to my research. Other simple things such as loan and printing policies and closing times reduced the effectiveness of the trips to London, which, of themselves, were time consuming. There was no appreciable library in Harlow, so travel to Cambridge to the north or London to the south was required. The Internet and WWW made up for some of the isolatedness of Harlow, but there was not the same level of material relating to England as was found in Newfoundland and Labrador. During this week, I also visited Abbottsweld Primary School and Bray's Grove Comprehensive School. These visits were the first long-stay visits, as I had stopped by on several occasions before for two to three hours at each school to meet with the administration and to touch base with the Information Technology coordinators to establish a working relationship with them and to inform them what I wished to accomplish at their schools. I also began some more concentrated work at Tany's Dell, working with the Information Technology coordinator.

Week 5 June 3 - June 7

There was a break at midterm (May 25 - June 2) during which all the schools were closed. We managed to travel to Greece for a week of fun and sun, a welcome break from the hectic pace of the first few weeks. Once back on June 3, I continued my contact with the three schools and began to branch out to several more. I contacted another Secondary school, Passmores, and an additional Primary school Potter Street, a school at which one of the undergraduate teaching interns mentioned that I was here as a computer consultant - I guess the prospect of free labour couldn't be passed up by the coordinator! It turned out to be a good working relationship. There was finally an opportunity to get to Wickford for an inservice session. One had been scheduled for earlier in May but was cancelled due to insufficient numbers. The session on June 5 dealt with databases, something I had not used before, so this was a most beneficial inservice for me. It also allowed me to an opportunity to talk to teachers about their inservice experiences as well as the level of support in their schools for Information Technology integration.

Week 6 June 10 - June 14

I attended another inservice session at Wickford this week. It was titled "IT for Modern Foreign Languages" with German, French and Spanish being the offerings. It mostly dealt with CD's which were available for purchase and how to integrate Information Technology within the curriculum. It was another opportunity to chat with teachers about their inservice experiences and how much access they have to inservice at their schools. There was quite a range of experiences, from fully supportive administrations and school governors to schools where the focus on Information Technology was just beginning and had an uphill battle. It was at this inservice session that I was able to assist, introducing the participants to some Internet resources for French, via our own StemNet WWW site. I had more experience with Internet searching and offered the participants the opportunity to contact some schools in Newfoundland and Labrador to create linkages among students and teachers. I made another trip into London this week and was able to make some headway with the journal searching. I was forwarded to contact some schools on the outskirts of London which were adopting unique approaches to inservice and which were establishing strong partnerships with local businesses.

Week 7 June 17 - June 21

I stayed close to home this week. I felt that I was visiting too many schools and was losing track of the ones I had been working with earlier. Some of the schools with which I was trying to establish contact for visitation were not very cooperative, cancelling my visits on the day before or even the day of my arrival. There were two schools in particular which were involved in preparation for inspection in the fall that were very difficult to deal with. In some cases, the day was wasted because it was not appropriate to call a school to arrange a visit on that same day after another had cancelled. Scheduelling was difficult because many times, I would be waiting for two or three schools to confirm a date for visitation and more often than not, schools would only be available on the same day. It meant that I had to cancel out on some in order to accommodate others. Nigel at the Information Technology Centre suggested that I concentrate on the three or four schools at which I had made progress, rather than try to establish new contacts. He informed me that the Information Technology consultants actually had little contact with the schools in Harlow, which may have contributed to my lack of success with some of the school.

Week 8 June 24 - June 28

I concentrated on visiting the four schools with which I had good working relationships. These were Tany's Dell, Passmores, Bray's Grove and Abbottsweld. The administration and Information Technology coordinators at these schools were very committed to the process of getting Information Technology into the curriculum, but there were different strategies in each school. Some were inclined to teach the students the skills needed to function as capable Information Technology users, as defined in the National Curriculum Orders for Information Technology, bypassing the idea of training all staff to become Information Technology users. This approach saw Information Technology as a discrete subject, taught in a stand-alone manner, by the Information Technology coordinator or other qualified teachers. The other approach was whole-school or staff-oriented, whereby the administration was committed to training the full complement of the staff in Information Technology applications and integration into the curriculum. These four schools were ideal samples for comparing and contrasting the approaches to staff development.

Week 9 July 1 - July 5

Last week saw the cancellation of another inservice session at Wickford. With the frequency of about one session every two weeks at the Information Technology Centre, there was a great loss of contact when one is postponed or cancelled. This apparently happened occasionally, but the Information Technology staff were unsure as to what was the cause for the recent increased attrition rate. I made another trip to London to try to establish contact with the schools that were adopting the unique approaches to inservice. As had happened before when there was no initial contact from a local education official, there seemed to be large hurdles to overcome in order to get access to these persons. The nature of the research, in that it was carried out in another country, posed considerable obstacles. There was little opportunity for initial contact prior to departure for England, as it was not settled where I would be stationed. Some contact with the Information Technology consultants and Martin Richards, the MUN liaison, via email could have paved the way for some smoother endeavours. It could have been, however, more beneficial to have encountered these setbacks in this environment, for they provided considerable lessons about research strategies.

Week 10 July 8 - July 12

This was a busy week for the work as an Information Technology consultant. I visited six schools, adding Burnt Mill and St. Marks, two comprehensive schools, to my list of visits. St. Marks offered an experience of a Grant-Maintained School, which meant it was virtually free to run itself with government money. It was a very progressive school, with Internet access available for students to conduct research, as well as a solid connection with some local businesses, who provided support for the expansion of the Information Technology facilities. Burnt Mill was a school that was struggling with trying to keep up with schools like St. Marks. It had a committed staff, but lacked the resources to implement the changes required.

Week 11 July 15 - 19

This was the final week of the internship, as schools closed on Friday. There was an opportunity to visit Wickford for one final time, which was beneficial, as four members of the team, Sue, Nigel, Peter and Graham were all there. The team was winding down for the summer and were doing some planning for the fall term. They also presented me with a copy of the Essex Advisory and Information Service's IT Handbook in final, pre-press form. I thanked them for their support and they expressed gratitude for the assistance I gave them as an apprentice Information Technology consultant. I also managed to visit some schools, especially Potter Street, a school in an underprivileged area of Harlow. I had made contact with the Information Technology coordinator through a fellow student and found that the experience of working with someone just beginning to implement a school Information Technology policy was very worthwhile. Even over a short period of time, it was an excellent example of the trials and tribulations encountered in a setting not capable of offering fully-equipped labs and training, yet was still determined to offer its students access to what other students were experiencing in more affluent schools. The contact with this Information Technology coordinator was one of the best learning experiences of the internship.

Section 2-Analysis of the Role of Information Technology Consultant

This section of the analysis of the internship looks more closely at the role of Information Technology consultant which I adopted during the 12 weeks in Harlow. During this time, I was stationed at a Information Technology Support Centre in Wickford, a city about 25 miles from my residence in Harlow, Essex County, England. I was placed there based on my intent to work with those who dealt with inservice and the Information Technology professional development of teachers in the area.

I anticipated that I would be in the general Harlow area, but upon arrival found that I was affiliated with this centre, quite a distance away. The great travel distance and the fact that I was basically volunteering my services as an intern made it difficult for me to incur the tremendous expense of travelling back and forth to Wickford on a daily basis. It was agreed by Faculty from Memorial in Harlow, the Information Technology consultant staff in Wickford and myself that an alternate arrangement would be needed. It was suggested that I adopt the role of itinerant Information Technology consultant in the area of Harlow, affiliated with, but not officially representing, the Information Technology consultants in Wickford. I would visit schools in the area, offering advice on computer-related problems, acting as an informal liaison between these schools and Wickford, and helping teachers and Information Technology coordinators plan how to integrate Information Technology into the classroom curriculum and how to help students and staff become more Information Technology literate. This arrangement itself was somewhat different than most other interns who had previously come to Harlow, as well as my colleagues there at the time, who were situated at schools or assessment centres in the Harlow area.

I was virtually on my own in Harlow most days, with email and telephone conversations with teachers and the staff in Wickford conducted on a near daily basis. The autonomy which this arrangement offered me was very beneficial, in that it allowed me the flexibility to visit schools according to my wishes, as well as the opportunity to go to Wickford for inservice sessions when they were offered. I could decide the order in which I would visit schools and could arrange follow-up if I felt it was warranted, based on consultation with the team at Wickford. It allowed me to feel like a professional in the fullest capacity, except for the fact that I was not being paid for my work. When I approached schools for visitation, I felt I was treated differently than a teacher who was under the wing of more experienced educator. This greatly boosted my confidence in matters relating to computer hardware and software, strategies for integration of Information Technology into the curriculum and approaches for training teachers to become competent and confident Information Technology users.

I did not anticipate that I would be accorded the degree of freedom I enjoyed, but it conformed well to my idea of a research-based internship. There had to be some flexibility to allow one to find one's way in a foreign setting. I felt that as a graduate student, I was deciding my own fate, yet, however, was still under the watchful eye of those under whom' s care I was placed. They were close enough, via email and telephone to set me straight and to offer suggestions on how to proceed. They kept their distance and allowed me to function to the degree that I wished to do, mindful that I was already a qualified teacher and had experience in computer-related settings.

When I was out in the schools as a consultant, I found that my experience as teacher from Newfoundland and Labrador somewhat disadvantaged me. There were similarities between the English and the Newfoundland and Labrador systems, in areas such as curricular content. It was necessary, however, that I gain

a deeper appreciation of the English school system, from School Governors, inspections, and Grant-Maintained schools to National Curriculum Orders, KeyStages and age-groupings of students. I had done some preliminary analysis of the English system prior to departing, but still had to quickly learn the structures and the centres of power in the system in order to converse competently with administrators and teachers, with whom I would be working.

Once having become familiar with the structure of the system, I next had to acquaint myself with the different equipment and programs which were offered. I had no experience with database applications and this type of application is widely used in the English Information Technology curriculum. I saw the potential of database programs applied to various curricular areas to which I had not even imagined them being integrated. Foreign languages and social studies were examples of courses in which databases were used to collate and to interpret information. Additionally, I had only limited exposure to spreadsheets and my time in schools and at the Wickford centre strengthened my competence in these types of programs.

The ability to move from school to school allowed me to share information between teachers at different schools, a practice which has diminished as schools have become more competitive in attempting to attract students which, in turn, increases their level of allocated funding. Schools, with the loss of Information Technology and other consultants available for inservice and support, as well the restructuring which propagated more insular, self-contained schools, has contributed to a decrease in the sharing of information among teachers. It was evident to me that some schools benefitted from the independence that they were accorded, yet most charted their own course with respect to Information Technology integration, in manners which may have been setting them up, unknowingly, to repeat mistakes made by other schools, due to the decreased

communication and sharing of ideas.

My considerable experience with Internet and WWW applications throughout my graduate program made up, I felt, for my inexperience with the English system and with database and spreadsheet programs. There was a factor of cost of Internet connections which has prohibited wide-scale use of WWW applications. Normal telephone connections, even to a local service provider, are subject to rates charged on a per-minute basis during normal rate periods, a cost enormously prohibitive to schools with limited funding. The staff at the Wickford centre were just becoming versed in Internet applications such as the WWW, but they did utilize email to a considerable degree. I was able to offer some instruction to the staff concerning WWW sites and navigation, as well as tips on WWW Homepage creation.

The Internet and WWW were just becoming prevalent in a few schools in Harlow at the time of my internship. There were three or four schools which had at least one Internet-accessible computer available for staff, while two had limited access available for students. Interestingly, these two schools had arrangements with local technological industries to provide free access and help in covering the cost of local telephone access.

My work at the inservice sessions was less beneficial, I felt, than the in-school work I conducted. I was available to offer support during the inservice, yet I had only minimal input on objectives and strategies. I was able, however, to take away lessons of strategies and approaches that did and did not work in the inservice environment. Additionally, the infrequency of the sessions and the short time spent with a group pointed to some of the problems experienced when inservice is delivered in one session. There usually was some follow-up, either through visits by the Information Technology consultants when requested or

through the help line. However, for the most part, teachers were sent back to school to face the task of Information Technology integration on their own.

Section 3 -Research Findings as Applied to the Internship Experience

The act of conducting research on Information Technology professional development in Essex County was carried out within the larger framework of the internship experience. The 12-week duration of the internship was intended to offer an opportunity to acquire experience, as well as to exercise responsibilities which are associated with the role of an individual in the area of an Information Technology inservice or professional development.

The research component was designed to analyze the literature findings on four criteria of Information Technology professional development: the impetus, the focus, the setting and the follow-up of inservice to teachers in this area. These criteria were then compared to the policy and the practices of Information Technology professional development, according to Essex County Education documents and personnel.

The research, in compliance with the guidelines for internships of the Faculty of Education, was integrated within the overall objectives of this internship and was conducted during the fulfillment of the duties as an Information Technology consultant. The findings, reported earlier in the second chapter, indicated that County policy tended to support the literature on the issues of the four criteria of Information Technology inservice and professional development.

Even though a qualitative approach was utilized during this research, there was an effort to remain objective and to conduct the research in a manner which relied on the analysis of the formal policy documents and to a lesser extent, on the

statements indicated by administrative personnel of Essex County Education.

Reflection on the ideals espoused in both the literature and the policy documents and opinions of personnel representing Education in Essex County, led to the research findings which were presented in the second chapter. The application of these findings to the "internship" part of the overall experience, the performance in the role of developing and delivering Information Technology professional development to teachers, brought the ideals face to face with the reality of acting in the role of Information Technology consultant. The experiences encountered during the internship can now be interpreted in light of the research findings, offering a more personal view of the practices and policies related to Information Technology professional development and inservice in Essex County. The research findings on each of the four issues tended to support a shift toward a more teacher-centred professional development arrangement.

Firstly, teachers would be allowed more opportunity to access professional development, shifting to them more control in the development and delivery of inservice. The focus of the inservice was to be more curricular based and the teachers' growth and learning was to be well sustained, to allow for a more successful integration of technology into the instructional setting. The impetus and control of the development and delivery inservice seemed difficult to remain with those who historically held the reigns. Even those teachers, who were to gain control in a shift away from the traditional administratively-driven process, were reluctant to take charge of their destiny. It encouraged a consideration that the theory and the ideal of teachers controlling their own professional development during school time required much effort before teachers felt empowered to act for themselves. As a potential developer and deliverer of such

inservice, it provided awareness of the reluctant mindset of many educators toward technology.

Next, on the two issues of the focus and the setting of Information Technology professional development, the movement toward a school and curricular-based form of Information Technology professional development and inservice was the general trend encountered, but was slow to initialize and to develop. The shift to a local setting and to ground Information Technology skills development in relevant curricula was difficult to master, despite having teachers in specific subject areas providing resources upon which to plan instructional integration. It pointed to the need for the exchange of both successful and of failed attempts of instructional integration of Information Technology, hopefully limiting future setbacks.

Lastly, the constant level of in-depth, sustained contact that was required to monitor the evolution of a teacher's progress with Information Technology implementation and integration was difficult to administer, given the varying degrees of teacher competencies, initiative and successful integration. Many teachers were under supported in their attempt to plan and to integrate Information Technology into their instructional practices, both in the areas of technical assistance and curricular focuses, due to insufficient numbers of Information Technology consultants.

The ability to step between the roles of researcher and Information Technology consultant allowed for a variegated experience. Consultations with County personnel offered insights into the direction of educational policies with respect to Information Technology within that jurisdiction. Operating in the role of consultant to teachers allowed for the experience of seeing these policies

being implemented at the grassroots level.

The internship accorded a next-to-ideal setting in which to conduct research in the area of Information Technology professional development and inservice. Formally studying policy and intended practices as a researcher and functioning daily in the role as a consultant accorded an opportunity to see the two spectres of the formation and delivery of inservice; that which was intended and purported at the County level could be observed and researched, while at the macro level of the classroom, the degree of variance from intention to actuality could be experienced.

In conclusion, I felt that I learned more than I expected during my 12 weeks in Harlow. Not only was it very beneficial to experience a different culture and to see how Information Technology is handled and applied in the English educational system, it was even a more rewarding experience to be able to learn these things and to develop my own Information Technology skills in a self-directed manner, a key, I feel to enhanced learning and development.

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Appendices

Appendix A

Introducing the Internet
KS 3,4

Use of the information super highway for both electronic mail use and accessing information services is rapidly increasing. This course will focus on the use of Netscape. accessing the Internet via RM's Internet for Learning and Eudora e-mail as well as investigating the use schools might make of the Internet. There will be discussion of the various ways in which schools may access the Internet and the hardware and software required.

Our network at Wickford is connected to the Internet via a kilostream link allowing fast. simultaneous access for all course members for the entire day.

Course Director:	Nigel Horn. EDAS Curriculum Development Adviser for
Duration:	1 day
Fee	35FSSR.60SR. 75FR
Accreditation:	Type 1
Date:	1 July 1996
Time :	9.30am to 4.00pm
Venue	Wickford Centre
Course Code:	IT671 1 WC6

EAIS - Making I.T. work for you
Wickford Centre, Alderney Gardens, Wickford SSII 7JZ
Telephone (01268) 769646 E-mail: edasit@rmplc.co.uk

Getting off the Drawing Board:
An introduction to CAD
KS 3, 4

An opportunity to experience some of the popular Windows based CAD packages available to schools. You will not become an expert in one day but you will have the opportunity to work through an introduction to CAD using Autosketch (version 2 for Windows) and gain an insight into its functions.

Course Director:	Graham Sapsford, EDAS Curriculum Development Adviser
Duration:	1 day
Fee	35FSSR.60SR. 75FR
Accreditation:	Type 1
Date:	27 June 1996
Time :	9.30am to 4.00pm
Venue	Wickford Centre
Course Code:	IT 6401 WC6

EAIS - Making I.T. work for you
Wickford Centre, Alderney Gardens, Wickford SSII 7JZ
Telephone (01268) 769646 E-mail: edasit@rmplc.co.uk

Appendix B

Introduction to Curriculum-Focused Databases Essex County Council Education

Programme

9:15	Arrival, registration and coffee
9:30	Introduction
9:45	Information Workshop - an introduction
10:30	Coffee
10:45	Creating your own files with Information-Workshop
11:30	Adding pictures and sound to Information Workshop files
12:00	Key+ - an introduction
12:30	Lunch
13:30	Key+ - using existing data files
14:30	Break
14:45	Creating your own files with Key+
15:30	Files, records, fields, etc. - the technical terms explained
15:45	Overview of other data handling packages used in schools
16:00	Close

EAIS - Making I.T. work for you
Wickford Centre, Alderney Gardens, Wickford SSII 7JZ
Telephone (01268) 769646 E-mail: edasit@rmplc.co.uk

Introduction to
Curriculum-focused Databases
Essex County Council Education

Searching a data file

It is important that data files are searched in a methodical way to ensure that the results of the search are reliable. There are a number of data files available on the network for you to investigate. Information Workshop files are in p:- choose from Monarchs. Counties. Birds or Witharm U. Witham U is a data file containing information about the residents of the Witham Union Workhouse in 1851 - it is a typical census data file encoded by pupils at a local school from the original census material.

You should make sure that you can do the following:

Perform a simple search (e.g. find all females)
Refine a simple search (e.g. find all females and then find all those aged over 60)
Clear the search to use all records.
Perform a complex search (e.g. find all females aged between 16 and 60 who are married)
Display the search records in various ways.
Generate graphs using all records and a searched selection.
Creating a data file
Remember that creating a data file is part of a wider process. The data file can only be created once the data structure has been determined and the data collected.
Make sure that you can create a data file containing a number of fields, use a variety of data types and modify the file structure.
Enter data in the file and edit the data in the file.
Link pictures and/or sound to records.

EAIS - Making I.T. work for you
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Telephone (01268) 769646 E-mail: edasit@rmpic.co.uk

Appendix C

County Primary School.
IT Audit March 1996

Current equipment.

Computers

1 x BBC B
3 x BBC Master
1 x IBM compatible

1 x A4000
1 x RM Window Box 386
1 x Window Box 486

Peripherals

2x 5.25 disc drives
2x 5.25/3.5 dual disc drives
2x Epson printers
lx Integrex printer
x HP 500c printer
lx HP 550c printer
Parallel concept keyboard
Roamer
Switch boxes
Mouser
Logo chip

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County Primary School
IT Audit 1996

Proposed Allocation of Equipment

Nursery
A4000 running SEMERC software HP 500c printer

Reception
**Archimedes (A4000/7000) *Printer

KS1
RM Window Box 486 (*with additional software such as SEMERC My World 2)
HP 550c printer

KS2
*RM Multimedia Window Box

*Printer
RM Window Box 386
Integrex printer

Any remaining computers in good working order to be used where appropriate with suitable software eg. Logo, Word processors for keyboard skills and subject specific software that are appropriate to curriculum needs.

(* to be purchased)

to be acquired through the Tesco scheme

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Telephone (01268) 769646 E-mail: edasit@rmplc.co.uk

Training

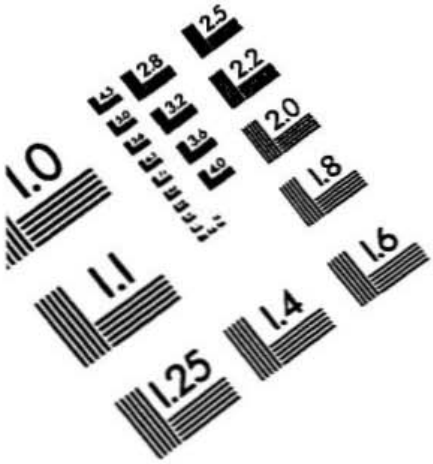
Non Pupil Day.

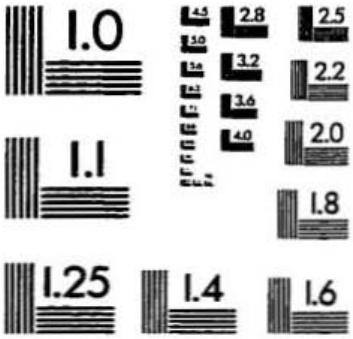
IT in the National Curriculum
The Development of IT skills Demonstration and 'hands on' sessions
Reviewing the IT policy.
Questions and answers.

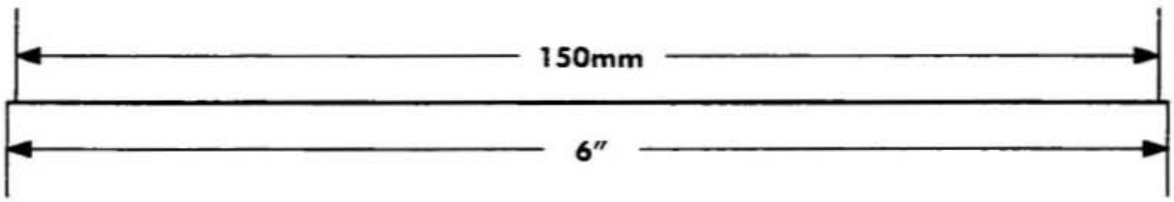
Future Training needs.

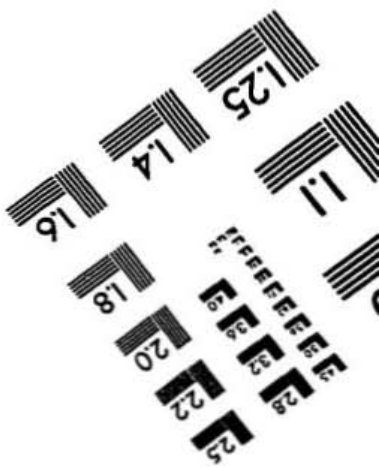
With the arrival of new equipment, the staff will need training to help them become competent and confident users. (RM provide a training voucher for 9-25 for each new Window Box)

IMAGE EVALUATION
TEST TARGET (QA-3)









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1653 East Main Street
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